

CLAIMS

WHAT IS CLAIMED IS:

1. A method of manufacturing an implantable medical device, comprising:

purifying a polymer by:

5 introducing a polymer into a mixing apparatus;

 introducing a fluid into the mixing apparatus;

 mixing the fluid with the polymer;

 removing at least a volume of the fluid from the mixing apparatus such that an
impurity is completely or at least partially removed with the fluid; and

10 collecting the polymer after removal of the impurity; and

 coating an implantable medical device with the purified polymer, or fabricating the
implantable medical device with the purified polymer.

2. The method of Claim 1, further comprising exposing the fluid to a temperature
equal to or greater than the boiling temperature of the fluid at ambient pressure prior to removing
15 the fluid from the mixing apparatus.

3. The method of Claim 1, wherein the mixing apparatus is selected from the group
consisting of a single screw extruder, an intermeshing co-rotating extruder and a counter-rotating
twin-screw extruder.

4. The method of Claim 1, wherein the polymer is exposed to a temperature equal to
20 or greater than the melting temperature of the polymer.

5. The method of Claim 1, further comprising heating the polymer to a temperature
equal to or greater than the melting temperature of the polymer.

6. The method of Claim 1, wherein the fluid is of a type to physically entrap the impurity without dissolving the impurity.

7. The method of Claim 1, wherein the fluid is of a type to dissolve the impurity.

8. The method of Claim 1, the method further comprising introducing a second fluid
5 into the mixing apparatus, and mixing the second fluid with the polymer and removing the second fluid and an impurity from the mixing apparatus.

9. The method of Claim 1, wherein the polymer is selected from the group consisting of an ethylene vinyl alcohol copolymer, poly(butyl methacrylate), poly(vinylidene fluoride-co-hexafluoropropene), polyvinylidene fluoride, poly(L-lactic acid),
10 poly(caprolactone), an ethylene-vinyl acetate copolymer and polyethylene glycol.

10. The method of Claim 1, wherein the fluid is selected from the group consisting of water, isopropyl alcohol, methanol, FLUX REMOVER AMS, acetone, ethanol, dimethyl acetamide, acetonitrile, dimethyl formamide, cyclohexane, dimethyl sulfoxide, and combinations thereof.

15 11. A coating for an implantable medical device produced by the method of Claim 1.

12. An implantable medical device fabricated by the method of Claim 1.

13. A method of manufacturing a coating for an implantable medical device,
comprising:

(a) purifying a thermoplastic polymer, the purifying including

20 (i) introducing a thermoplastic polymer having an impurity into an extruder,

(ii) introducing a fluid into the extruder,

(iii) mixing the fluid with the polymer,

(iv) removing at least a portion of the fluid and impurity from the extruder, and

(v) collecting the polymer after removal of the impurity; and

(b) applying a composition to an implantable medical device, the composition

5 including the purified polymer, a solvent and optionally a therapeutic agent.

14. A coating for an implantable medical device produced by the method of Claim 13.

15. The method of Claim 13, further comprising exposing the fluid to a temperature equal to or greater than the boiling temperature of the fluid at ambient pressure prior to removing the fluid.

10 16. The method of Claim 13, the method further comprising exposing the polymer to a temperature equal to or greater than the melting temperature of the polymer while the polymer is in the extruder.

17. The method of Claim 13, wherein the polymer is selected from the group consisting of an ethylene vinyl alcohol copolymer, poly(butyl methacrylate), poly(vinylidene fluoride-co-hexafluoropropene), polyvinylidene fluoride, poly(L-lactic acid),
15 poly(caprolactone), an ethylene-vinyl acetate copolymer and polyethylene glycol.

18. The method of Claim 13, wherein the fluid is selected from the group consisting of water, isopropyl alcohol, methanol, FLUX REMOVER AMS, acetone, ethanol, dimethyl acetamide, acetonitrile, dimethyl formamide, cyclohexane, dimethyl sulfoxide, and combinations
20 thereof.

19. A system for removing an impurity from a polymer, comprising:

(i) an extruder, the extruder having

(a) a first orifice configured to receive a polymer;

- (b) an element configured to convey the polymer through the extruder,
- (c) an injection port configured to receive a fluid,
- (d) an extraction port configured to remove the fluid; and
- (e) a second orifice configured to eject a polymer;

- 5 (ii) a pump for introducing the fluid into the injection port; and
- (iii) a vacuum in communication with the extraction port.

20. The system of Claim 19, wherein the extruder further comprises a zone capable of heating or cooling the polymer.

10 21. The system of Claim 19, wherein the extraction port is positioned in close proximity to the injection port.

22. The system of Claim 19, wherein the element comprises one or more screws having a configuration capable of heating the polymer through shear stress.